

CHART 1: ALLOWABLE VERTICAL LOAD (LBS) FOR DKB LAMINATED COLUMNS 8FT O/C UNDER CONSTANT WIND LOAD OF 160 LB/FT USING ASCE 7-10 LOAD COMBINATIONS AND 96 LB/FT USING ASCE 7-05 LOAD COMBINATIONS

(LAMINATIONS HAVE CERTIFIED STRUCTURAL GLUED FINGER JOINT AT SPLICE)

Sidewall Height (ft)	12		14		16		18		20		22	
	Eave Condition		I	II	I	II	I	II	I	II	I	II
3 ply 2x6	14,660	14,660	9,930	9,930	5,950		n/a	n/a	n/a	n/a	n/a	n/a
4 ply 2x6	21,260	21,260	14,810	14,810	10,560		7,660		n/a	n/a	n/a	n/a
3 ply 2x8	32,650	32,650	26,100	26,100	19,030	19,030	14,120	14,120	10,560		9,730	
4 ply 2x8	44,050	43,830	35,530	35,090	27,770	26,320	20,890	20,200	16,130	15,880	12,580	

Chart Notes:

- This chart is for Diamond K Builders (DKB) nail-laminated columns with certified structural glued finger joints used in a normal post-frame building (enclosed all four sides) and shall be supported at the top by diaphragm action of the building.
- All members and connections designed using Allowable Stress Design (ASD) as per IBC 2009, 2012 and 2015 (NDS and ASAE EP559)
- All columns are #1 SYP using design values per NDS 2012 Table 4B Addendum dated March 2013 and NDS 2015 Table 4B
- Wet use reduction factor used for treated wood portion only
- Certified structural glued finger joints between the treated and untreated in accordance with the provisions of ASAE EP 559
- Dead Load to Total Load ratio = 0.25
- ASCE 7 Wind design criteria: Building (Risk) Category II, Wind Exposure C, Enclosed Building, 28ft max midheight, 4:12 roof pitch, ASCE 7-05 wind speed 90 mph, ASCE 7-10 wind speed 115 mph, ASCE 7-05 Wind Load = 96 lb/ft, ASCE 7-10 Wind Load = 160 lb/ft
- Wind load is calculated for 8ft o/c column spacing
- Repetitive member factor, C, is 1.35 and 1.40 for 3-ply and 4-ply #1 SYP columns, respectively, per ASAE EP559
- All posts are roller or spring supported at top to simulate resistance from diaphragm action of roof and shearwalls
- Eave Condition I allows no horizontal movement at eave; Eave Condition II allows some eave deflection defined by the L/240 limit measured at the most extreme point of the deflected column curvature. Underlined values represent columns at specified height that slightly exceed L/240 deflection limit even under restraint of Condition I. Eave Condition I represents the ideal restraint conditions required to achieve the maximum possible column load capacity (in most cases); this condition is not common in post-frame construction and can only be achieved with very rigid roof diaphragms. Most properly designed post-frame building diaphragms will have horizontal displacement of greater than Eave Condition I.
- Horizontal deflection limit of L/240 is suitable for walls with and without brittle finishes (where L is the building height); actual deflections are based on larger of sidesway at the building eave or curvature of the column.
- Analysis considers P-delta effect
- Effective length factor, K_e, is 0.9 for all conditions
- ASCE 7-05 Load combinations: 1) Dead+Snow 2) Dead+.75(Wind+Snow) 3) Dead+Wind; ASCE 7-10 Load combinations: 1) Dead+Snow 2) Dead+.75(0.6Wind+Snow) 3) Dead+0.6Wind
- Non-Constrained post foundation designed per ASAE EP486.1
- Full lateral bracing and major axis bending only, no loads acting on weak axis
- Exterior sidewall post with lateral loading from wind only; loads from knee braces, stored materials, Bi-fold and Hi-fold doors, machinery or other impact loads are not considered in this chart
- Final column design should include a complete building analysis by a design professional

COLUMN SECTION DIMENSIONS

Combination	Width (in) x Depth (in)
• 3-ply 2x6	4-5/16 x 5-3/8
• 4-ply 2x6	5-3/4 x 5-3/8
• 3-ply 2x8	4-5/16 x 7-1/8
• 4-ply 2x8	5-3/4 x 7-1/8

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